Washington Park Arboretum

BULLETIN

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Spring 2018

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Washington Park Arboretum

The Arboretum is a 230-acre dynamic garden of trees and shrubs, displaying internationally renowned collections of oaks, conifers, camellias, Japanese and other maples, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington Botanic Gardens and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

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The Arboretum Foundation's mission is to create and strengthen an engaged community of donors, volunteers and advocates who will promote, protect and enhance the Washington Park Arboretum for current and future generations.

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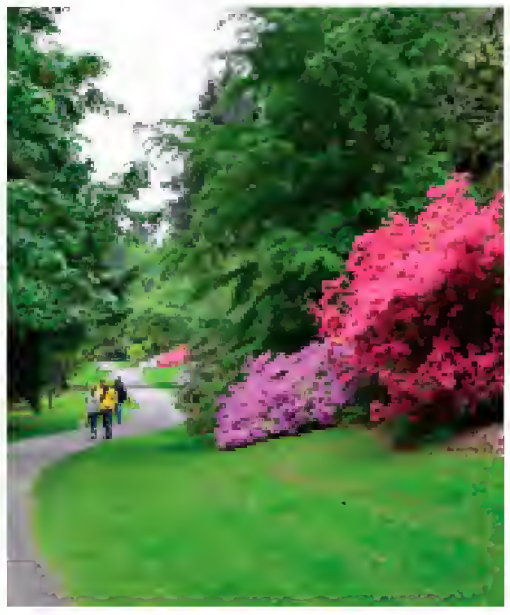
ABOVE: Leatherleaf viburnum (*Viburnum rhytidophyllum*) blooming in April in the Arboretum. Two specimens dating to the 1960s can be found in the Viburnum Collection not far from the new Loop Trail. (Photo by Niall Dunne)

ON THE COVER: Looking south along the Loop Trail, not far from the Wilcox Bridge. The trail opens up new vistas in the Arboretum and makes many parts of the plant collection much more accessible. (Photo by Niall Dunne)

Your Arboretum Is Waiting!

I was recently amused to see the Seattle Japanese Garden featured in an article in "The Stranger" called "Seven Places in Seattle to Go When You Feel Lonely But Don't Want to Interact with Anyone." While the story offered some bad advice about koi feeding (please don't give them granola or other human food!), it also highlighted the delicious solitude that one can experience in the Garden. There are many other such enclaves throughout the Arboretum, where people go to think, to remember, to rekindle their optimism. I find when I walk alone along our shady paths that I tend to observe at a deeper level. Some days, that's the Arboretum I want.



Other days, I delight in watching people who are here enjoying relationships and making memories. With the opening of the new Loop Trail, each day there are active seniors walking together, helmeted youngsters mastering their training wheels, and friends snapping pictures and swapping stories. Multi-generational groups stroll down Azalea Way on Sundays, chatting in a number of languages, and avid gardeners delight in discovering a favorite new specimen together.

However, the champions in my book are a group of special folks who, in the process of volunteering for the Arboretum and the Japanese Garden, also build its community. In March and April, we see the ramping up of the Plant Donations Nursery team, the Pat Calvert Greenhouse, the Gift Shop volunteers and our Garden Stewards program. Arboretum units plan their spring meetings, and a new season of volunteer-guided tours begins in the Japanese Garden. These volunteers work to preserve and enhance our wonderful park, but also develop a shared love of its history and composition. Curious? Come join the Loop Trail celebration on April 8th or the Earth Day crew on April 21st and see what it means to be in the Arboretum community.

Seeking solitude? Making memories? Creating community? Your Arboretum is waiting.

Jane Stonecipher
Interim Director
Arboretum Foundation

Island of Serenity

The Moss Garden at Bloedel Reserve

Text by Darren Strenge

Photos by Darren Strenge and Pamela Bartha

It is no secret that moss grows very well here in Western Washington—so well that entire companies exist to clean it off roofs and sidewalks. While problematic when thriving in the wrong place, moss often is an integral part of our regional landscapes, whether naturally or by design.

Moss in our gardens is usually a welcome interloper or an intentional landscape component. It is rare, though, that moss is the primary feature. It may approach or even achieve this status in many Japanese-style gardens, but public "moss gardens" are uncommon. Here in the Puget Sound, one special moss garden can be found at the 150-acre Bloedel Reserve on Bainbridge Island.

Broom forkmoss

Selwyn's smoothcap moss

A SHORT HISTORY

Opened to the public in 1988, the Bloedel Reserve contains a variety of designed gardens and wild areas. Visitors begin their journey by strolling through a meadow to a bird refuge. Then a woodland trek opens onto formal grounds with ponds and Prentice and Virginia Bloedel's former residence. The tour continues through the Rhododendron Glen, Orchid Woods, Japanese Garden, and into the Moss Garden before entering the formally hedged Reflection Pond.

In the early 1980s, Prentice Bloedel engaged accomplished landscape architect Richard Haag to design a series of garden "rooms" on the property. One of these was the moss garden, initially called the "Anteroom." The idea for its creation was born out of two separate travel experiences.

Haag and Richard Brown, the Bloedel Reserve's first director, were in Vancouver, British Columbia attending the Western Regional Meeting of the American Association of Botanical Gardens and Arboreta (now the American Public Garden Association). While there, they visited the Nitobe Botanical Garden, a traditional Japanese garden at the University of British Columbia. The velvety green moss carpets in that garden impressed them greatly, and upon returning, they discussed with Prentice Bloedel the possibility of recreating the effect.

Around that same time, the Bloedel's daughter, Virginia Wright, and her husband, Bagley, had been travelling in Japan, and they showed her father photos of mossy Japanese gardens. Prentice Bloedel was sold, and work on the Bloedel Moss Garden began in late 1982.

They chose an area with a high water table, across the drive from the Japanese Garden, as the location for the moss garden. Native salmonberry was removed, as were some resident red alders, to open up the understory. At Prentice Bloedel's direction, a large number of devil's walking stick (*Aralia spinosa*) were planted as an understory tree. Most of these have succumbed to time, but some other related species have been planted. Devil's club (*Oplopanax*), *Metapanax,* and a couple of species of herbaceous, perennial *Aralia* are doing well.

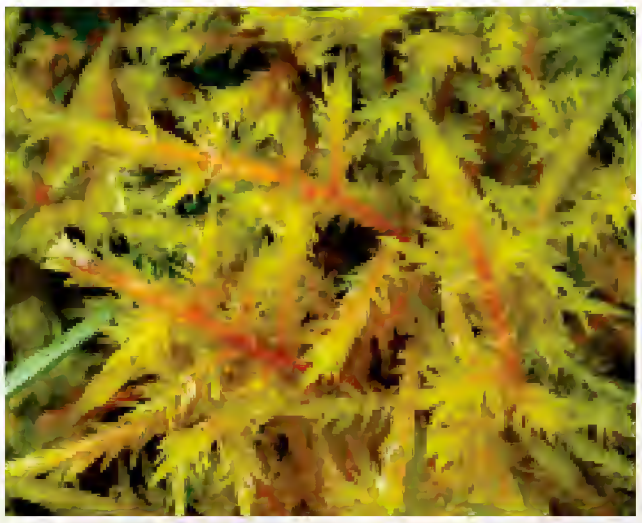
With the land cleared of most undergrowth, the garden crew set to establishing moss. Perhaps counterintuitively, rather than moss, they planted Irish moss—a flowering plant. Irish moss (*Sagina subulata*) superficially resembles moss, and it was hoped that native mosses would naturally replace it over five years or so.

The native mosses indeed took over without hesitation. Now 36 years later, there are around 45 species of mosses and liverworts and very little *Sagina*. Mosses grow in every niche they can find. The ground is a green carpet. Logs, tree bases and branches are modestly adorned in feathery mosses. Even the rocks cannot escape the creeping green blanket.

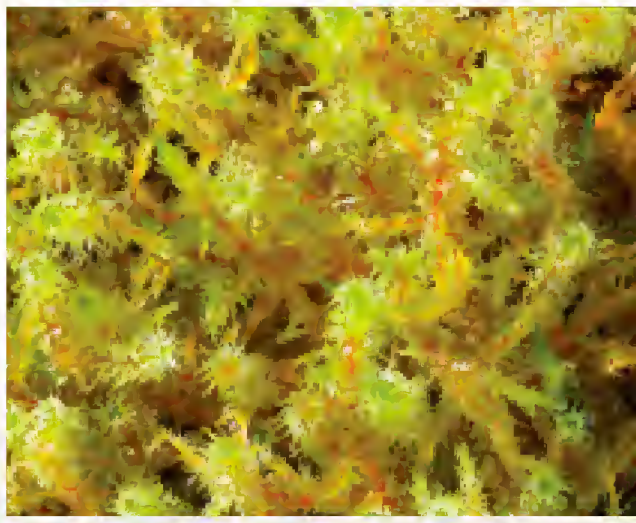
SPOTLIGHT ON THE SPECIES

Of the resident mosses, a small number of species dominate the landscape, while others play more specialized roles. Of the ground-dwelling species, bent-leaf moss (*Rhytidiadelphus squarrosus*) is the local show-off, hogging the sunniest spots in the garden. Due to its

Juniper haircap



Pointed spear moss



Bent-leaf moss

tolerance for sunlight, it's a common sight in lawns around our region.

Another lawn moss, pointed spear moss (*Calliergonella cuspidata*), tolerates sun almost as well as bent-leaf moss, edging its way into Bloedel's Moss Garden where it can. In slightly shadier areas, it competes with other shade-loving mosses.

Perhaps the most dominant moss in the entire garden is Selwyn's smoothcap moss (*Atrichum selwynii*), a dark green, upright moss that carpets the native soil like a small forest. Mosses reproduce via spores produced in structures called sporophytes. Selwyn's smoothcap moss produces reddish-brown sporophytes so prolifically that large patches of the garden floor have a hairy, reddish cast in late winter and early spring.

In the boggier garden areas, juniper haircap (*Polytrichum juniperinum*) and bank haircap (*Polytrichastrum formosum*) are common. Bank haircap, a relatively large moss growing up to several inches tall, is often found in large patches several feet wide, resembling forests of little green bottlebrushes. The similar juniper haircap is a little shorter and grows in smaller, more sporadic colonies.

If a moss could be described as "happy," the happiest moss would be broom forkmoss (*Dicranum scoparium*). It is a large, vigorous, tuft-forming moss of an unusually bright-green color. So bright and distinctive is its shade of green that, at least in the Bloedel Moss Garden, it can be reliably identified by color alone.

MOSS GARDEN MAINTENANCE

Maintaining a moss garden involves a lot of labor. Keeping large areas of moss happy requires frequent weeding to suppress competition and cleanup of fallen leaves and branches that might shade out the green carpet. In the summer, supplemental watering keeps the moss lush and beautiful.

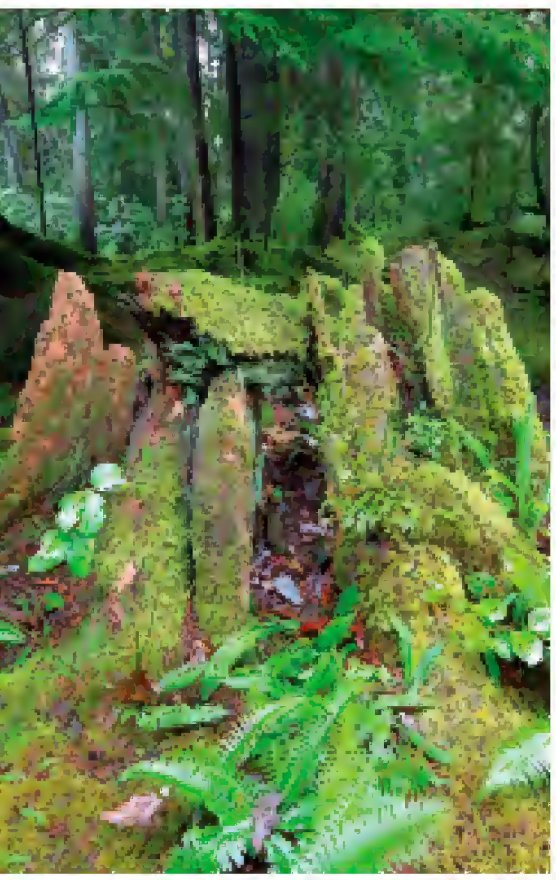
Autumn is a particularly busy season. To support the large amounts of moss, tree canopies shade most of the garden space. Unfortunately, this means falling leaves and needles at the end of summer. While turf will turn yellow if covered with leaves for a day or two, moss seems to be able to go for a couple weeks without problem beneath a layer of leaves. Or so has been the experience within the moss garden at the Bloedel Reserve.

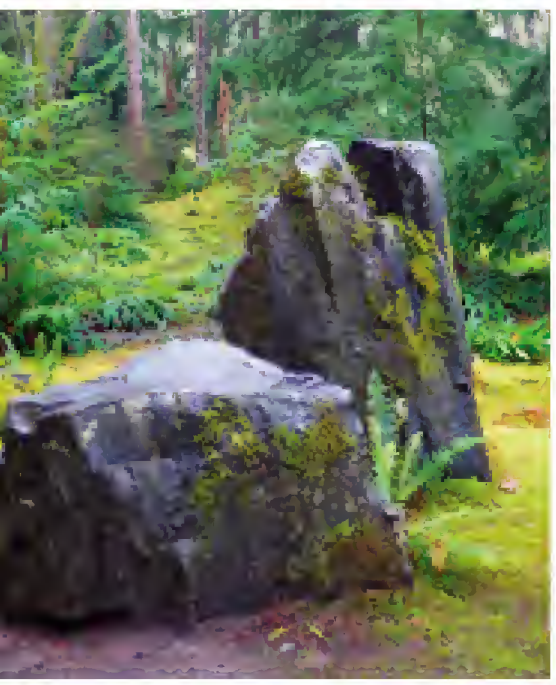
However, for the sake of appearances, leaves are cleaned up as often as time allows. Usually this is two or three times a week during the heaviest leaf-fall. Because of the delicate nature of moss, blowers and rakes are used very, very gently to avoid removing any moss with the leaves.

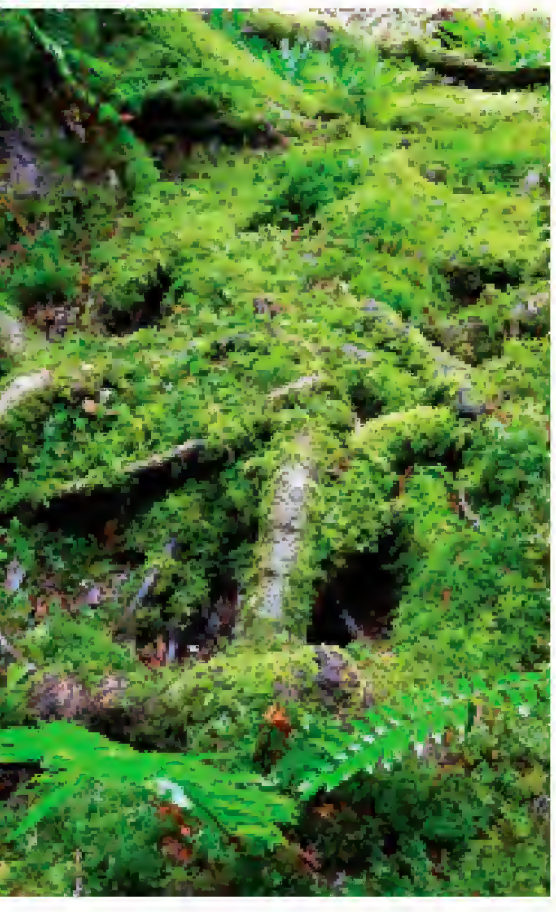
Once autumn departs and winter arrives, leaves that have accumulated in the nooks and crannies of roots and logs and ferns are removed by hand. It is a slow process, but necessary for the fine level of detail needed.

Once the weeds begin to surface, constant pulling and rooting out of the unwanted plants is necessary. For some weeds, this begins as early as January and continues into autumn.

With all the leaf cleanup and weed pulling, the workload piles up. Historically, the Moss Garden has been assigned a single gardener who is rarely wanting for moss-related tasks. The







Bloedel Reserve also has a strong volunteer program that provides volunteer support for the gardens, as well as for various guest experiences. More volunteers are always welcome!

A SPECIAL ADAPTATION

While moss gardening shares some similarities with other gardening forms, one thing quickly becomes apparent to anyone caring for moss—from a single pot of it to a large, established moss garden: Mosses are amazingly drought tolerant, so much so that they appear to put cacti to shame!

Most mosses exhibit a form of physiological drought tolerance called poikilohydry. Unlike most other plants, mosses are not able to regulate a constant amount of water in their cells and they will freely lose or absorb water depending on the surrounding environment. To cope with this, they have evolved the ability to completely desiccate and spring back to life seemingly unharmed with the next rain.

This herculean drought tolerance makes irrigation easy for the moss gardener. Moss left to dry for a while is no cause for alarm. Periods of drought may even be beneficial to our native mosses, which are adapted to a dry summer. Warm-weather watering does serve the purpose of keeping the moss looking lush for visitors to the garden.

Periodic watering keeps the moss looking good, and it is necessary for the other plants besides moss in the garden. While the moss can do without water, trees, shrubs and herbaceous plants will appreciate an occasional watering. The Bloedel Reserve's moss garden features other plants besides the trees that provide shade; these companion plants are an integral part of the garden as well.

MOSS COMPANIONS

Just like moss compliments plantings in other garden styles, other plants are used to compliment moss. There does not really seem to be a single way to define a moss garden, but at the Bloedel Reserve, we follow a few simple rules to ensure that the moss garden is indeed a "moss" garden.

First, open space is encouraged to allow for large swaths of moss. Interest is added by the contours of the ground, mossy logs, and appropriately placed shrubs and ferns. A few areas have nothing but moss growing in between widely spaced trees. While this is a wonderful effect, it is not necessary that the entire garden be devoid of non-mosses.

Second, we avoid showy flowers and brightly variegated leaves. Because most mosses are green, a moss garden is about showcasing different shades of green and visual textures. Showy blossoms that immediately draw the eye would be out of place; however flowers still have a role to play.

At Bloedel's moss garden, white-flowered aralias, green-flowered *Decaisnea* and red huckleberry provide understated floral interest. The flowers don't catch your attention from a distance but, instead, are discovered up close as you come upon them, providing little "oh wow!" moments.

Colorful fruits also have their place. Red huckleberry and purple-fruited salal produce prolific amounts of berries but do so without distracting too much from the mosses' glory. *Decaisnea fargesii* planted along the trail produce wonderful, pea-pod-like fruits of an unusual, deep Prussian blue in late summer. Small discoveries like flowers and curious fruit provide little "easter eggs" for visitors to find within the larger beauty of the moss garden.

Third, because flowers are de-emphasized, we encourage non-flowering plants like ferns and conifers. The native deer fern (*Blechnum spicant*) is perhaps the most common fern in the moss garden, followed by sword fern (*Polystichum munitum*) as a distant second. Ferns provide interest on stumps, break up sharp borders between trails and rocks and moss, and create little islands of foliage in larger moss swaths.

The combination of design elements that emphasize and compliment the moss create a peaceful, shady stroll that is easy on the mind. How fortunate we are that Virginia and Prentice Bloedel, Richard Haag and Richard Brown designed this green treasure for others to enjoy. Moss gardens are an underused garden style. I hope that those who've had the good fortune to experience them will contribute to the creation of more moss gardens as little islands of serenity within our region and world.

MOSS-GARDENING TIPS & FACTS

- You can convert a problematic, mossy turf into a "moss lawn" by removing the grass.
- To create a new moss garden, simply clear an area and spread around moss fragments. Walk on the fragments to press them into the soil and keep the plot weeded and watered.
- Boost moss species diversity by providing a variety of growing surfaces. Soil, logs and stumps, and rocks all support different types of moss. A variety of light and moisture levels will also encourage different mosses to grow.
- Most native Northwest mosses need dry periods. Letting your moss garden dry out periodically is not only okay, but also a good moss-gardening practice.
- Moss does not need added fertilizer. Consider the fact that moss does just fine on your presumably nutrient-poor roof! Enough nutrients are provided by the soil, fallen plant debris, and even blown-in dust to keep moss happy.
- Moss is not high on the deer menu.
- Few pests and diseases attack moss, although birds tearing up moss to get at worms may occasionally be a problem.

Darren Strenge is the plant health manager and moss gardener at the 150-acre Bloedel Reserve on Bainbridge Island (bloedelreserve.org). He is also a garden columnist for the "Kitsap Sun."

Housing the Wood Duck

Text and Photos by Larry Hubbell

What is your first thought when you see the above photo of a male Wood Duck? You might think "Wow, what a colorful bird," or—if you know more about waterfowl—you might categorize it as a "dabbling duck" as opposed to a "diving duck." (Wood ducks are wetland birds that generally feed by tipping over and searching just below the water's surface for food—rather than diving under the water.)

I would be a bit surprised if you immediately thought of a Northern Flicker, say, or a Pileated Woodpecker. It may seem odd, but woodpeckers play a critical role in Wood Duck procreation.

Unlike mallards and other dabbling ducks, who build their nests near water and close to ground level, Wood Ducks need safe, pre-built, elevated cavities—usually in trees and preferably near water. (They have specialized tree-climbing claws to help them land on, perch in, and climb trees.) Around Union Bay, and in the Arboretum wetlands, woodpeckers may be the only native creatures who make holes in trees large enough for Wood Duck nests.

A Need for Dead Wood

However, in cities, large, dead trees are always in short supply. And I suspect that among our local Wood Ducks, the lack of tree cavities is likely the primary factor limiting their reproduction. Their need to reproduce is so strong that female Wood Ducks will often leave eggs in neighboring Wood Duck nests, and males will often attempt to inseminate females other than their mates. Basically, Wood Ducks strive to pass on their genetic material by any means possible.

Competition for pre-fabricated nest holes around Union Bay and other wetlands isn't just confined to Wood Ducks. Buffleheads, Mergansers and Goldeneyes are also incapable of creating their own nest sites and primarily depend on woodpeckers to do the construction work.

The solution to the lack of nesting sites is twofold. First, we need to leave more standing dead trees in our parks. Near water, we need to designate more space for cottonwoods and alders, which are short-lived and so can provide a steady supply of dead wood and new nesting sites.

TOP: Mother Wood Duck with her young.

MIDDLE: Wood Duck pair in a tree.

BOTTOM: Volunteer installing a Wood Duck box.

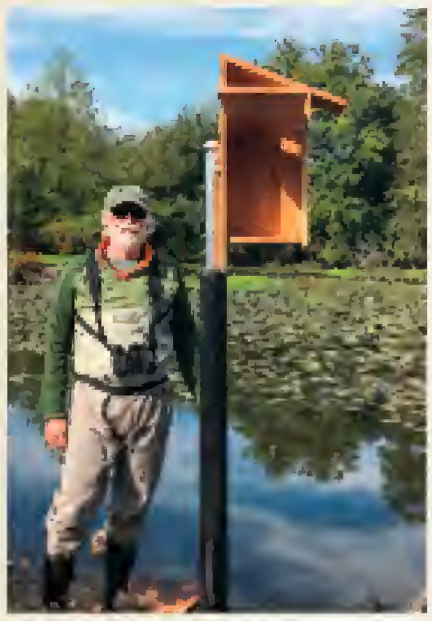
Second, we should refresh, replace and augment the number of Wood Duck boxes around Union Bay on an annual basis. The new boxes would not be just for Wood Ducks, but for any of our native cavity-nesting birds.

Nest Box Installation

During the last year, with the blessing of the UW Botanic Gardens, a group of five volunteers, including myself, installed 10 new Wood Duck boxes around Union Bay. Three of the nest boxes are near Foster Island in the Arboretum.

We hope that this spring, the boxes will provide a safe and functional alternative for Wood Ducks who have had trouble finding natural nest sites. If all goes as planned, mother ducks will find and use the boxes to incubate their eggs. Shortly after hatching, young Wood Ducks will jump out of their nests, fall to the ground, and follow their mothers to water.

If you notice one of the boxes during a stroll around the Waterfront Trail, or on the new SR 520 Trail, or while visiting the Union Bay Natural Area, please keep your distance in order to avoid possible nest disturbance.



Wood Ducks are extremely shy. The best way to observe them is with binoculars. Give them space—and let the magic happen!

Predators such as Norway rats and crows, and other nest-box invaders such as starlings, can put ducklings at risk, even before they hatch. If you notice any animals other than Wood Ducks in a nest box, please contact me via email at ldhubbell@comcast.net, and let me know the type of creature you saw, the box number, and the date of the encounter.

Larry Hubbell is a Seattle-based nature photographer and writer specializing in the birds and natural life of Union Bay and the Arboretum. Check out his blog: **http://unionbaywatch.**

ELEMENTS OF
DESIGN

Structure in the Garden

By Phil Wood

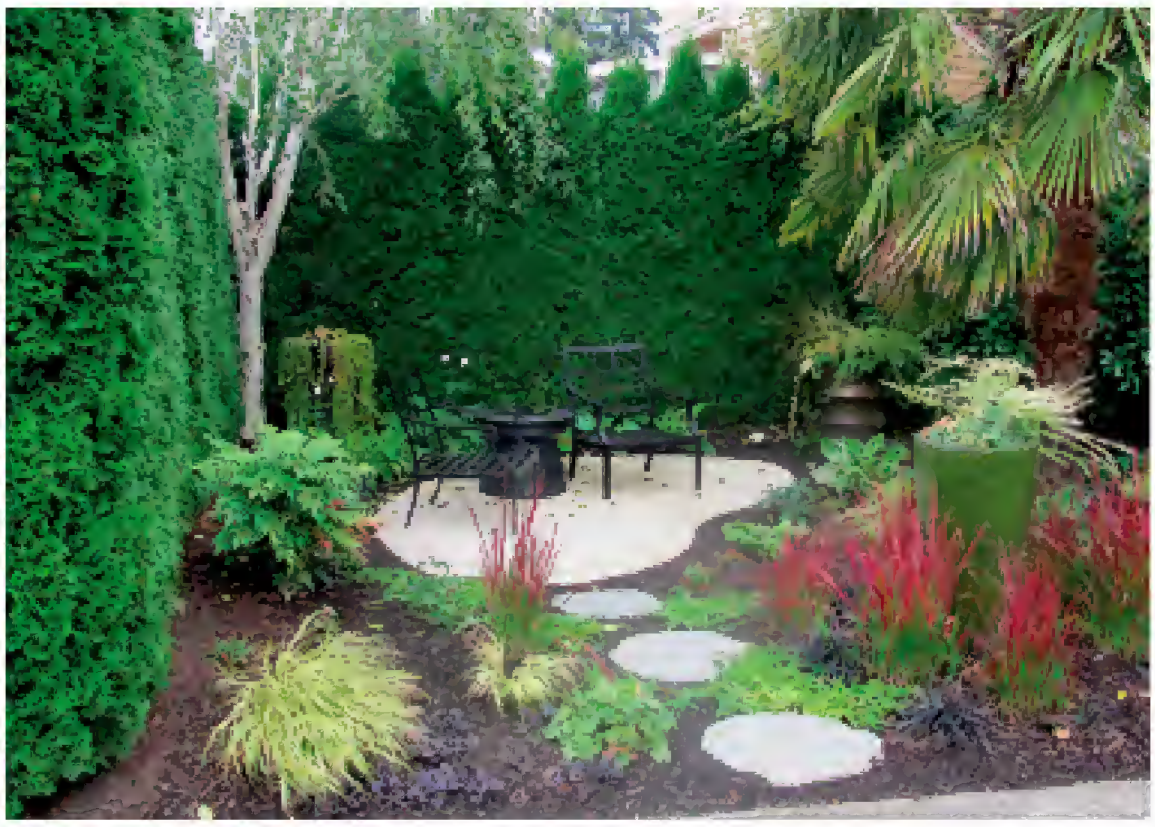
Of all the elements of design, consider structure first. The layout of paths, fences, walls and beds provides good bones for the garden. We crave an underlying order in composition, whether it is immediately obvious or not.

One inspiration for structure can come from nature. Looking at a Northwest landscape, we see the geologic forces that produced it. Wind and water shape the bedrock produced by volcanoes. Glaciers and rivers make the valleys and plains. Forests, meadows and grasslands cloak and soften it. Garden designers can take inspiration from the landscape and lay out natural-looking lines in the garden. Traditional Japanese gardens provide good examples of this abstraction of nature.

Formal geometry provides a different kind of structure. Take inspiration from the classical gardens of Europe; think Versailles or Italian Renaissance gardens. Formal design dates to Persian gardens, which were enclosed by walls against the harsh desert environment and featured crossing paths representing the four rivers of paradise meeting at a central point.

Familiarity with both naturalistic and formal gardens gives us a variety of design tools. Consider which one suits your style. Can't decide? You don't have to: A garden can combine both formal and naturalistic structure, with one playing off against the other.

Add structure by considering circulation. How you move through your garden—both with your eyes and your steps—provides a key to design. Paths linking one point to another become design elements. For naturalistic design, imagine paths as rivers, pooling in quiet places to create patios and gathering places. In a formal design, straight lines create focal points with a striking plant pot or sculpture at the end of the view. Curving lines create mystery: What is around the corner, out of sight?



Pay attention to positive and negative space. Negative space—lawns, patios and pools—provides the open areas in a garden for activities. Positive spaces are the beds and buildings that outline the negative open spaces. Open space gives breathing room and a foil for the pattern and texture of plants. In a garden filled with only plants, you could not see the forest for the trees.

Use the shapes of the negative spaces to reinforce the design. A freeform lawn, patio or pool adds a naturalistic element to an informal design. In a formal garden, consider a square or rectangle or other geometric shape for the open spaces. A circle fits into a formal or informal design. Circles center a space, bringing order to a garden with irregular edges. Circles and curves also provide contrast and add variety to straight lines.

Make your planting plan reinforce or contrast with the lines and shapes of the garden design. Formal planting plans include topiary, sheared hedges and regular repetition of plants. However, in a formal geometric layout, the strong lines are often enough to create an organizing framework that supports an informal arrangement of plants. Informal planting plans are a good match for an informal layout, however they can have their own inherent structure too, such as the patterns formed by the contrasting shapes, colors and textures of the plants.

You can't get away from structure because it supports the success of your garden design.

Phil Wood is the owner of a residential landscape design company and serves on the Editorial Board of the "Bulletin."

FACING PAGE: A circular stone patio centers this Seattle garden and provides strong geometry for supporting an informal planting plan.

ABOVE TOP: Stone paths and a circular patio give structure to this garden in Bellevue. The repetition of plant forms reinforces the formality.

ABOVE BOTTOM: In this tropical island-themed Kirkland garden, built around an existing palm tree (*Trachycarpus fortunei*), the informal shape of the patio provides open space, and a stepping-stone path gives circulation and visual movement.

A Winter Garden Milestone

By Niall Dunne

FACING PAGE
LEFT: Regrading of the Winter Garden in 1988. (Photo by Iain Robertson)

RIGHT: The new garden five years after the redesign. (Photo by Joy Spurr)

This year, an iconic garden at the Arboretum—the Joseph A. Witt Winter Garden—turned 30 years old. Set in a clearing surrounded by tall native conifers, just a short walk from the Graham Visitors Center, the garden is celebrated as a welcoming space filled with woodland plants that peak in interest at a time of year when most gardens are dormant or subdued.

But the space wasn't always quite so welcoming, and the garden isn't really 30 years old. The original Winter Garden at the Arboretum dates back to the late 1940s. (Some of the Witt's larger and most spectacular witch hazels, for example, are more than 60 years old.)

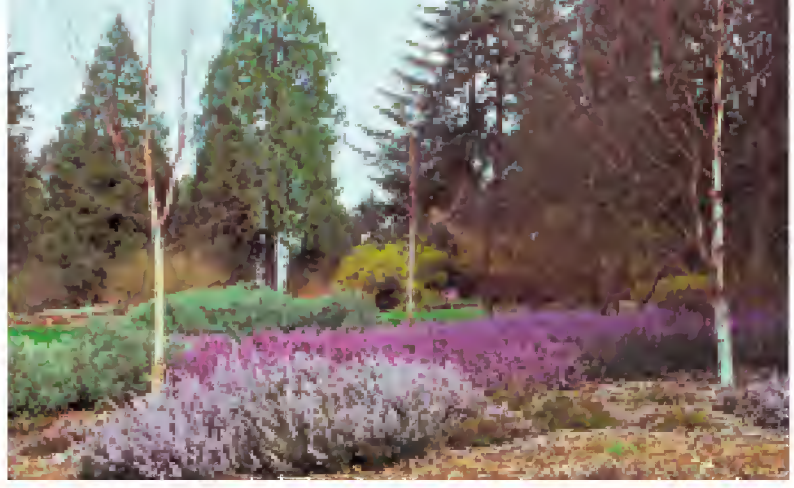
In the late 1980s, however, the original garden went through a major redesign and was rededicated in honor of legendary Arboretum Curator Joe Witt. Iain Robertson, associate professor at the University of Washington's Landscape Architecture Department, created the design for the garden we know today.

"The Winter Garden's location did not change, but its main trail used to run straight through the garden site—encouraging visitors to simply keep going," says Iain. "While I was surveying the existing beds for the new design, I was asked by some passersby what I was doing. When I said I was working on the redesign of the winter garden they asked 'where is it?' We were standing in the middle of the garden! Obviously, the garden needed a lot more spatial definition. We did considerable clearing and rerouted the path around the perimeter of the new open space."

Tim Hohn, the Arboretum's plant curator at the time, worked closely with Iain on the project.

"Tim provided me with a five-page list of winter-interest plants suitable for the garden. But clearly we had to discipline ourselves, because the site could not contain more than a fraction of that plant list," says Iain. "I tended to focus on plants that seemed to fit a woodland glade concept, and limited the number of plants with winter fruit or berries."

"We retained plants in their existing locations wherever possible, but the most important site change was regrading the garden to provide positive slope for surface drainage and include subdrainage pipes. This was important because although the site was relatively open, a small lip of impervious clay at the top of the slope down to Azalea Way restricted subsurface drainage, so much of the site and beds would have been inaccessible during wet times—that is, much of the winter!"



Thirty years later, all of us who visit the garden benefit from the vision and skill of Iain, Tim, and the Arboretum's horticulture staff of the time.

In early February of this year, at the Arboretum Foundation's Opening Night Party at the Northwest Flower & Garden Festival—the "Winter Garden Carnavale"—we celebrated Iain as our honored guest, and how the investments made 30 years ago still impact us in a positive way today.

The impacts are felt by young and old alike. One of our speakers that evening was Cait McHugh, the UW Botanic Gardens Environmental Educator in charge of school-age programs at the Arboretum. She talked about the importance of connecting children to the natural world, not just for their own health and well-being but also for the health and stewardship of planet Earth. And she said the Arboretum is an incredible resource for making that connection happen.

"Take the Witt Winter Garden," said Cait. "With its amazingly fragrant plants, it's a great place for sensory exploration, and for teaching kids about pollination. When we invest in special places like the Winter Garden, we continue to reap the benefits 30 years later and beyond. Similarly, the early experiences that we provide to kids can blossom and bear fruit, and eventually those benefits pass on to the next generation."

As it happened, the Garden Show (now the Garden Festival), which has been a great supporter of the Arboretum since its inception, was also celebrating a 30-year milestone. Along with Iain, we honored the Garden Show's founder, Duane Kelly, for his vision—and for showcasing (just like the Witt) the beauty of plants during the supposed doldrums of winter.

Niall Dunne is the editor of the "Bulletin" and the communications manager for the Arboretum Foundation.

WASHINGTON PARK ARBORETUM
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Sunday, April 8, 2018 | 12-3 p.m.
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COME LOOP
THE LOOP!

The Many Faces of *Aesculus*

I grew up on a farm in northern Ohio, and there were two common horse chestnuts (*Aesculus hippocastanum*) in our front yard that provided much-needed shade from the intense summer sun. I remember sitting under them for hours, often with visiting relatives or just waiting for the temperature to drop so that I could retreat to my second-floor bedroom in our very solid (and hot) brick house.

The trees were quite messy, and how my grandparents ever came to plant them is a mystery. In the fall, many wheelbarrow-loads of fruits and leaves had to be raked and hauled off the lawn. I was not amused when my city cousins came to visit and remarked that the large, nut-like seeds made the most wonderful necklaces and "people" ever! (It's easy to craft a human "head" by drawing eyes and other facial features on the round white scar at the base of each seed.)

TOP: Foliage of the common horse chestnut.
(Photo by Joaquim Alves Gaspar/Wikimedia Commons)

ABOVE: Fruits of the common horse chestnut.
(Photo by Solipsist/Wikimedia Commons)

FACING PAGE: Flowers of the common horse chestnut.
(Photo by Wendy Cutler/Wikimedia Commons)

By John A. Wott

Incidentally, the trees are still there 60 years later. Today, I know there are many more faces of *Aesculus*, and in the Pacific Northwest, some special ones stand out.

Quick Look at the Genus

The genus *Aesculus* is made up of 15 or so species of deciduous trees and shrubs from North America and Eurasia. The species hybridize readily, both in the wild and in cultivation, providing even more variation—and sometimes making identification tricky. Cultivars of some species are also available.

The *Aesculus* collection at Washington Park Arboretum currently features 81 trees and shrubs, comprising 12 species and 12 hybrids, varieties and cultivars. (The core collection is concentrated in the south end of the park, just west of Pacific Connections.) All *Aesculus* are prized for their handsome foliage and showy flowers. What's more, they are relatively easy to grow, adapting well to most soil types.

In America, the native *Aesculus* are commonly called "buckeyes," a name derived from the resemblance of the shiny seed to the eye of a deer. In the Old World, they're called "horse chestnuts"—a name that arose from the belief that the trees were closely related to edible chestnuts (*Castanea* species), and because the seeds were fed to horses as a medicinal treatment for chest complaints and worm diseases. (The horseshoe-shaped scars left on *Aesculus* branches when the leaves drop may have also contributed to the origin of the common name.)

Aesculus is part of the Sapindaceae or soapberry family, which includes maples and lychees. It is only distantly related to the edible chestnuts, which reside in the Fagaceae or beech

family. The seeds of *Aesculus* are toxic to people, due to the presence of esculin and other chemical constituents.

The leaves of *Aesculus* are easy to recognize. Borne in pairs, they are divided palmately (that is, like a hand with fingers extended), usually into five or seven large leaflets. Just to keep you on your toes (or fingers), though, some *Aesculus* leaves have three, nine or eleven leaflets. In late spring and early summer, gorgeous upright panicles of flowers are borne at the end of *Aesculus* branches and are attractive to insects and hummingbirds.

Flower color varies from creamy white to yellow to red, depending on the species or variety. The flowers develop into thick, leathery and, in some cases, prickly fruits that split in autumn to reveal large, shiny, brown seeds. As an added bonus, some *Aesculus* also boast fiery fall colors.

Following are profiles of some of the buckeyes and horse chestnuts found in the Arboretum. All the plants perform well in our region.

Aesculus hippocastanum (common horse chestnut)

The most familiar member of the genus is, of course, the common horse chestnut (*Aesculus hippocastanum*). Native to northern Greece, Albania and Bulgaria, it is a stately tree that grows up to 60 feet tall and bears large, toothed leaves with five to seven leaflets. In late spring, spectacular stout "candles" of white flowers cover the foliage. These develop into spiky, two- to three-inch-wide fruit capsules with large seeds.

The tree has been widely cultivated in parks and gardens, and along streets, all over the world. In Ireland and Britain, children traditionally play a game called "conkers" with the seeds. The game requires two players, each with a conker threaded onto a piece of string. They take turns striking each other's conker until one breaks.

A famous specimen was the Anne Frank Tree, which grew in the center of Amsterdam and was mentioned in Frank's diary. It survived until 2010, when a heavy wind blew it over. Eleven saplings, sprouted from seeds of this tree, were transported to the United States and eventually found new homes at notable museums or U.S. institutions, including the National September 11 Memorial and two Holocaust remembrance centers.

The Arboretum has a number of fine specimens, including a double-flowering cultivar 'Baumannii' (located near the Viburnum collection) that doesn't set fruit. (No conker cleanup required!) According to UW Botanic Gardens Curator Ray Larson, some specimens along Lake Washington Boulevard may date back to the Olmsted "Boulevard Era" (1903–1933), prior to the founding of the Arboretum.

One of Seattle's more familiar plantings of *Aesculus hippocastanum* lines 17th Avenue NE in the University District, north of N.E. 45th Street. These trees have survived years of "attention" from hundreds of students.

Aesculus pavia (red buckeye)

The red buckeye, or firecracker plant, is a beautiful clump-forming woodland shrub from the Southeastern U.S. that thrives here in the Northwest but, sadly, is seldom seen. (The Arboretum has about a dozen of them, mostly in

Red buckeye in bloom.
(Photo by Eric Hunt/Wikimedia Commons)

the core collection near Pacific Connections.) It typically grows between eight and 10 feet high and produces five leaflets per leaf. Richly colored red flowers are held on large panicles in late May or early June and are magnets for hummingbirds. The fruit capsules that develop are smooth and about one to two inches wide.

Red buckeye has an irregular rounded crown. Some older gardens in the Northwest have grafted specimens with more consistently rounded crowns and pendulous branches. Several cultivars are available, including '*Atrosanguinea*', featuring dark-red flowers, and '*Humilis*', a low-growing, sometimes prostrate, shrub. Fall foliage of *A. pavia* is unremarkable. The plant does best in moist, well-drained soils and benefits from afternoon shade.

Aesculus californica (California buckeye)

Native to California and the Siskiyou area of southwestern Oregon, *Aesculus californica*, is the only West Coast member of the genus. In the wild, it can grow up to 40 feet tall, but it is more often found as a spreading shrub growing up to 15 feet tall. California buckeye often produces a distinct, flat-topped crown and is also noted for its smooth, silver-gray bark. The abundant leaves are usually split into five leaflets and have a shiny, almost metallic hue.

Flowering occurs in the summer here and often lasts for months at a time. Usually, a lone, fragrant, pure-white or light-rose flower will open at the top of each panicle first, and this flower will form a fruit at the same time that the other flowers begin to open. However, in some years, all the flowers open at once, creating a dramatic show that contrasts wonderfully with the deep-green foliage. The fruit capsules are smooth and pear-shaped and often hang on the plant after the foliage drops.

Adapted to dry slopes and canyons, California buckeye responds to summer drought stress in the wild by dropping its leaves. In the Northwest, if we get a hot, dry summer, the plant may strip itself naked in September. Usually though, the foliage will hold on into October, when it turns a handsome yellow color before falling.

The fragrant flower spikes of California buckeye.
(Photo by Eugene Zelenko)

Persistent fruits of the California buckeye.
(Photo by John Morgan/Wikimedia Commons)

Flowers of Ohio buckeye.
(Photo by H. Zell/Wikimedia Commons)

Aesculus x *carnea* 'Briotii' blooming in the Arboretum.
(Photo by Niall Dunne)

The Arboretum has several specimens down at the south end, including three plants that date to the late 1950s.

Aesculus × *carnea* (red horse chestnut)

The red horse chestnut is of unknown origin. Most experts believe it to be a hybrid between the *A. hippocastanum* and *A. pavia*. It is thought to have originated in Germany and was known in the trade there as early as 1820. The plant's origins have been the subject of much discussion, controversy, and even research, but regardless, it is a wonderful tree for gardens. That's because it is shorter than the common horse chestnut, growing only up to 30 or 40 feet, and it has gorgeous red flowers. (The word *carnea* is Latin for "flesh-colored.")

Several cultivars are available, including 'Briotii', which has a compact habit and darker red flowers compared to the straight species. (The Arboretum has a lovely specimen just south of the Plant Donations Nursery.) 'Aureomarginata' offers leaves with prominent golden-yellow margins.

Aesculus glabra (Ohio buckeye)

In its native Midwestern and lower Great Plains habitat, the Ohio buckeye can reach up to 70 feet tall and develop a rough, fissured trunk. In the Northwest, however, it usually remains a shrubby plant, only getting up to about 20 feet tall. The leaves of this species are usually divided into five leaflets, and in the fall they turn a striking yellow, with shades of bright red and orange.

The flowers are yellow to yellow-green and appear in spring. They develop into a two-inch-wide capsules with warty spines. Native Americans used to extract the tannic acid from the seeds to cure leather. There's a lot of natural variation within the species. At the south end of the Arboretum, across the Boulevard from the Japanese Garden, are three specimens of the Texas variety, *A. glabra* var. *arguta*. This variety has seven to nine leaflets (sometimes eleven) and creamy-white to light-yellow foliage.

Honorable Mentions

Other notable species in the Arboretum collection include *Aesculus indica*, the Himalayan horse chestnut. Both our specimens date to the 1950s and came to us from the Carl English Botanical Garden at the Ballard Locks. One can be found in the Linden Collection on Duck Bay; the other near the Viburnum Collection, close to the new Loop Trail. Rarely seen in cultivation in the U.S., this horse chestnut features large, glossy foliage and whitish-pink summer flowers.

Aesculus flava, yellow buckeye, from the eastern U.S., is a beautiful large tree that grows up to 75 feet tall. It offers pretty yellow flowers, a

Fall foliage on yellow buckeye in the Arboretum. (Photo by Joy Spurr)

spine-free fruit capsule, attractive yellow-orange to red fall foliage and handsome gray-brown bark. The Arboretum has nine specimens dating back to 1940, including three fine trees close to the new Loop Trail, just south of the Viburnum Collection.

An exciting new addition to the collection is *Aesculus wangii*, donated in 2008 by Dan Hinkley. In its native range in Vietnam, it is threatened by habitat loss and relatively unknown. It bears enormous clusters of scented, purple-brown-spotted yellow flowers in spring, followed by large conkers up to four inches across. The foliage is quite attractive, too. Our specimen is located in the upland area south of the Woodland Garden.

A Note on Progagation

Aesculus species are easily propagated by seed, but cultivars are most often budded (propagated by growing a bud from one plant on another plant). In such cases, the common horse-chestnut is used as understock. If you do bud, then select the buds from the axils of the large leaves, as the small, older buds usually will remain dormant.

When the seed capsules fall, they are usually still partially green. However, if you do intend to germinate the seeds, husk them as soon as possible. The seeds are best planted as soon as they fall. If left to dry, they often do not germinate. They can also be given a cold stratification period, but it is easiest to sow them outside and let mother nature provide the best conditions.

LOOP TRAIL AND *AESCULUS* ACCESSIBILITY

The new Loop Trail will make it easier for visitors to see and appreciate many of the Arboretum's plants, including some its horse chestnuts and buckeyes. The trail should make it easier to view the *Aesculus* near the Viburnum Collection and along Lake Washington Boulevard.

According to Ray Larson, the trail also improves accessibility to some of the plants in the core part of the *Aesculus* collection, notably in the area between Azalea Way and the now-graveled, cut-through path to the New Zealand Forest and Overlook gazebo). Access to the *Aesculus* around and near the large true firs (*Abies* species) on that hillside is particularly improved.

John A. Wott is the director emeritus of UW Botanic Gardens and a member of the "Bulletin" Editorial Board.

Q&A from the Miller Library's Plant Answer Line

Cool-Colored Plants for Hummingbirds

TEXT BY REBECCA ALEXANDER
PHOTOS BY LARRY HUBBELL

This regular column features Q&A selected and adapted from the Elisabeth C. Miller Library's Plant Answer Line program. If you'd like to ask a plant or gardening question of your own, please call (206) 897-5268 (UW Plant), send it via the library website (www.millerlibrary.org), or email directly to hortlib@uw.edu.

QUESTION: I would love to keep adding plants to my garden that will entice hummingbirds but, unlike them, I don't love red or orange flowers. Will they still visit my *Kniphofia* blooms if they are yellow instead of red-hot? Also, how does a hummingbird's feeding affect the level of nectar in flowers? Can hummingbirds exhaust a plant's supply of nectar and cause harm?

ANSWER: Science has not yet thoroughly explored why hummingbirds appear to prefer the color red. There are several variables to consider. Plants with red flowers may have a "reputation" down through the generations of hummingbirds for being high-quality sources of nectar. The color red, at least initially, may be what catches the hummingbird's eye when seen against the backdrop of a garden (much as red is said to draw the attention of humans—or bulls!). It could be that, because red is not a color readily seen by bees, it is a floral strategy some plants have evolved to attract other types of pollinators.

If you are seriously averse to the color red, perhaps something red in your neighbor's garden will be what draws hummingbirds to the neighborhood first, but if you provide a rich array of flowering plants that have tubular blooms, the creatures will most likely discover your garden, too. I've seen hummingbirds sipping from yellow, white, blue, purple and lavender flowers in my own garden (see "Hummingbird Plants").

Hummingbirds also appreciate snacking on insects, since protein helps them build muscle—for all that high-velocity flying and hovering! Avoid using pesticides, and let garden spiders be. Even in a small garden, you can encourage biodiversity by growing plants that attract hummingbirds and other pollinators while simultaneously satisfying your own aesthetic preferences (no need to plant vast swaths of red flowers!).

As to the nectar question, in an essay called "Patterns of nectar production and plant-pollinator co-evolution," Robert William Cruden and his co-authors note that "flowers pollinated by high-energy requiring animals [including hummingbirds] produce significantly more nectar than flowers pollinated by low-energy requiring animals, such as butterflies, bees, and flies." For this reason alone, I do not think you should worry about visiting hummingbirds wearing out their welcome with your flowering plants.

Similarly, plants whose pollinators are active in the day (such as hummingbirds) produce more nectar during the day, and plants pollinated by nocturnal creatures will make more nectar at night. So, clearly there is an intricate system of response between the needs of the plants and the needs of the hummingbirds.

Indeed, studies have shown that the removal of nectar by pollinators actually stimulates the production of more nectar. One study of hummingbird-pollinated penstemons found that one species (*Penstemon speciosus*) takes just three to four hours to refill its nectaries after they've been emptied. This ability to replenish nectar persists throughout the life of the flower, until the corolla (petals) drops off.

Anna's Hummingbird visiting the flowers of a mahonia.

The flowers are actively encouraging the co-adapted birds to come back for more. This makes sense because both the hummingbirds and the plants have evolved so that both parties benefit when the nectar feeding occurs. The relationship goes even deeper than the simple flow of nectar: "Different species of hummingbirds have differently shaped beaks that evolved to allow them to drink from a certain kind of flower. In return, the flower species it feeds from has evolved to produce nectar especially tasty to hummingbirds and to prevent bees and other animals from stealing it." (Source: Arizona State University webpage "Ask-A-Scientist," accessed November 2017; https://askabiologist.asu.edu/hummingbird-evolution.)

continued next page

HUMMINGBIRD PLANTS

Here is an anecdotal list of hummingbird favorite flowers (and their colors), based on observations in and around my own garden.

Camellia sasanqua (white tinged with pink)
Ceanothus (blue)
Dipelta floribunda (pink-tinged white with golden throat)
Epilobium septentrionale 'Select Mattole', aka *Zauschneria septentrionalis* 'Select Mattole'(scarlet)
Eucalyptus (blue-gray foliage, not flowering—maybe there are delectable insects on it!)
Jasminum humile (yellow)
Kniphofia 'Bee's Sunset' (yellow-orange)
Lonicera (many types of honeysuckle, various colors)
Mahonia/Berberis (yellow)—visit the Washington Park Arboretum's Witt Winter Garden for a stunning flurry of hummingbird activity when these are flowering!
Monarda (red and reddish purple cultivars)
Penstemon (pink to red)
Phygelius (dusky pink)
Ribes sanguineum (pink to red)
Salvia officinalis 'Berggarten' (purple)
Sarcococca (white)
Syringa meyeri 'Palibin' (pale lavender)
Viburnum (various species) (white or pink-tinged)

HUMMINGBIRDS YOU MAY MEET IN THE GARDEN

West of the Cascades, we are fortunate to have year-round visits from Anna's Hummingbirds (the first sighting in Seattle was at a bird feeder in 1964). Rufous Hummingbirds are regular migratory visitors here, typically arriving in March and staying through September. Calliope and Black-Chinned Hummingbirds are migratory in the eastern part of the state, but like Costa's and Allen's Hummingbirds they are seen in Western Washington on rare occasions. The official Washington State checklist of birds from 2015 features these species:

- Ruby-Throated Hummingbird
- Black-Chinned Hummingbird
- Anna's Hummingbird
- Costa's Hummingbird
- Broad-Tailed Hummingbird
- Rufous Hummingbird
- Allen's Hummingbird
- Calliope Hummingbird
- Broad-Billed Hummingbird

According to recent research by Stefan Abrahamczyk and Susanne Renner, there are 361 hummingbirds species in the Americas, and approximately 7000 different species of plants rely on them for pollination. Some plants have evolved, or are still evolving, to prefer bird pollinators over insect pollinators. These plants tend to have sucrose-rich nectar, often brightly colored flowers (84 percent of these are red, according to the authors), and stigmas and stamens arranged to enable cross-pollination by hummingbirds.

Birds can cover greater distances than insects, and many hummingbirds pollinate several related species of plant, whereas insect pollinators tend to be more specialized. Hummingbirds do not rely on one plant source alone for nectar, and this is yet another reason they are unlikely to exhaust the nectar supply of plants in your garden. ~

Rebecca Alexander is the Plant Answer Line librarian at the Miller Library, located in the UW Botanic Gardens' Center for Urban Horticulture (3501 NE 41st Street, Seattle). She is also a contributing editor to the "Bulletin."

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Anna's Hummingbird feeding from an evergreen huckleberry.

Myrtle Thorgrimson

Myrtle Thorgrimson (Mrs. Oliver) was a charter member of the Arboretum Foundation and served for many years on the Board of Directors. Both she and her husband were among those who helped establish the Arboretum.

A knowledgeable and keenly interested horticulturist, she shared her knowledge and over the years wrote many articles for the "Arboretum Bulletin;" she was a Life Member of the "Bulletin" Editorial Board. An Arboretum unit was named for her, and the Thorgrimson Cup is awarded annually to the Arboretum unit that has done the most for the Arboretum.

She was a charter member of the Lake Washington Garden Club and a member of the Seattle Garden Club. For many years, she was an active member of the Garden Committee of the Children's Orthopedic Hospital.

Her own beautiful garden was always open to those who share her love of propagating and the growing of new and interesting plant material. Her generosity and enthusiasm will be greatly missed.

— Mrs. Rex Palmer, "Arboretum Bulletin," Winter 1972

"Like the rhododendron, the camellia likes our cool moist climate and gives great returns for very little effort on our part."

—From "Camellias," "Arboretum Bulletin," Spring 1945

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Sorbus caloneura

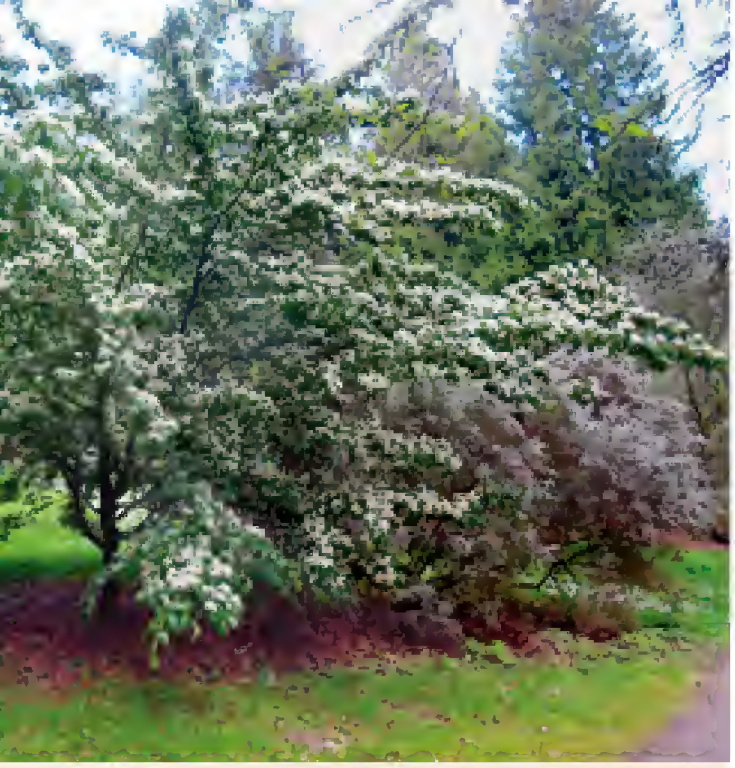
By Walt Bubelis

While walking north along Arboretum Drive toward the Graham Visitors Center last May, I found myself veering off to the east. I was attracted to a small tree of exquisite shape and foliage that was in full bloom. The leaves resembled those of a double-file viburnum (*Viburnum plicatum*)—oval in shape, about three to four inches long, with serrated edges and deeply incised, parallel veins. But I was deep in the heart of the Mountain Ash collection, and the plant turned out to be a *Sorbus*—one that was unfamiliar to me.

A small tree, *Sorbus caloneura* grows slowly to 35 feet in the wild, but usually only half that size in cultivation. The foliage is deep green in the summertime, but when it's just emerging in early spring, it is a striking bronze. Come fall, the foliage develops a rich golden or orange tone. The species name comes from the Greek for beautiful (*cala*) and veined (*neuro*).

Atop the leaves were full clusters (technically corymbs) of fragrant, inch-wide white blossoms, 20 to 30 in each group. It was a spectacular display of color, riding just above the leaves—again, much like you'd see on the doublefile viburnum. The day was cool, so bee activity was minimal, but normally the flowers of this *Sorbus* are heavily visited by buzzing pollinators.

The fruits develop in the summer, but being small and brownish, are not as attractive as those



New foliage in early spring is a beautiful bronze color. (Photo courtesy Tony Garn/Royal Botanic Garden Edinburgh

of other *Sorbus*. If you wanted red fruit color on a similar-looking plant, you could seek out the related species, *S. alnifolia*, but you'd be getting a tree that's twice as tall in the bargain.

Native to forested mountains of western, central and southern China, *Sorbus caloneura* also extends into Vietnam, Myanmar and Malaysia. Augustine Henry, the Imperial Customs Service agent and plantsman, discovered the species. In 1904, at the suggestion of the Henry, famed plant explorer Ernest Wilson brought seed back to England to his employer at the time, Veitch Nurseries, and they successfully germinated it and had it blooming within five years.

Seed propagation remains a popular approach for increasing one's stock of this plant. Grafting is sometimes done, and propagation from green-wood cuttings (taken from the tips of leafy stems) should also be successful.

Sorbus caloneura is in the section Micromeles, a whitebeam group distinguished by the single-leaf shape, as opposed to the compound leaf most of us associate with *Sorbus* (such as the foliage that is found on the common European mountain ash, *S. aucuparia* or our own native western mountain ash, *Sorbus scopulina*).

Like most mountain ashes, *Sorbus caloneura* does best in full sun to partial shade and moist, well-drained soil. It's not particular about soil type or soil acidity, making it an easy plant to site. It can attract minor infestations of aphids or scale, but these are usually not an issue on an otherwise healthy plant. The same can be said of disease issues, with only occasional specimens getting a foliar rust, *Armillaria* root rot, or *Phytophthora* root rot. The bacterial disease fire blight can also appear at times.

All in all, it's an easy and reliable plant to grow and is worth seeking out. It's small enough for most gardens and can be grown as either a shrub or tree, adding variety of form to its variety of seasonal colors.

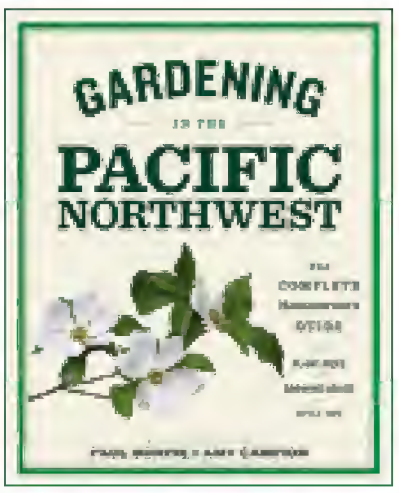
The Arboretum has two specimens of this plant in its prized Brian Mulligan Sorbus Collection. One came from seed collected in the wild in China by Peter Wharton of the University of British Columbia. We received the seed in 1995, propagated it, and planted the young specimen in the old Lath House in 1999. In 2001, it was moved to its current location in the Sorbus Collection. The second specimen is a cutting from a different nursery plant derived from the original seed batch; it was planted in the Sorbus Collection in 2002.

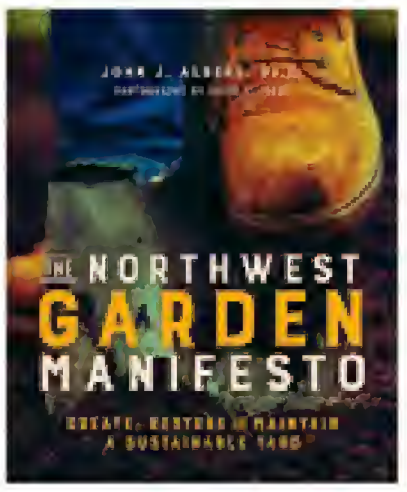
Walt Bubelis is a professor emeritus in the Horticulture Department at Edmonds Community College. He is also a member of the "Bulletin" Editorial Board.

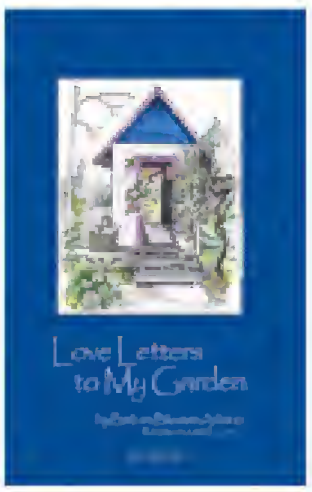
In a Garden Library

New Books for Pacific Northwest Gardeners

By Brian R. Thompson







Pacific Northwest Gardening Basics #1

I always look forward to new books intended for Pacific Northwest gardeners. Paul Bonine and Amy Campion's "Gardening in the Pacific Northwest" has been long anticipated, and it doesn't disappoint. As explained in the introduction, this book is mostly from Bonine's perspective, as he grew up here and has gardened in this region for many years. Campion did most of the excellent photography.

I found myself reading this book out of order, starting with the final chapter, entitled "Design: Northwest Garden Style." Intended as an introduction to design styles, this essay is also an excellent local history of ornamental gardening that examines why our gardens look the way they do.

Keeping this in mind, I returned to the introductory chapters on climate, soils and garden culture with a better understanding. Here, I found the authors' selection of climatic subregions especially interesting. As expected, Seattle is part of the Puget Sound subregion, but Portland and its immediate suburbs have a subregion of their very own, one that's entirely surrounded by another subregion, that of the Willamette Valley. While I was at first surprised by this, after reading the distinguishing factors, I decided these divisions make a lot of sense and will help gardeners who live there make better plant selections.

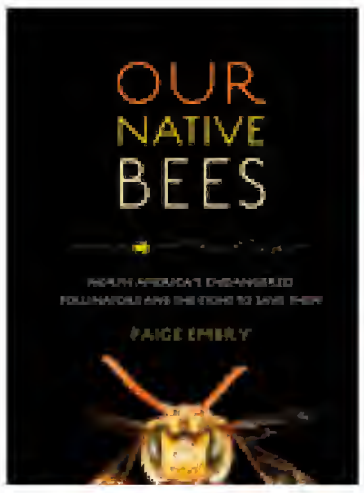
The plant encyclopedia in the book is especially good for woody plants. Most of the featured species are represented by just a single cultivar, but the ones that the authors chose are excellent selections. After admiring *Albizia julibrissin* 'Summer Chocolate' at a couple of Portland gardens last summer, I appreciated learning why it is rarely seen around Seattle. Our immediate subregion "normally doesn't receive enough summer heat for its wood to harden off properly in preparation for winter's cold, leaving it vulnerable to even mild freezes." Tips like these make the selection in the encyclopedia especially valuable.

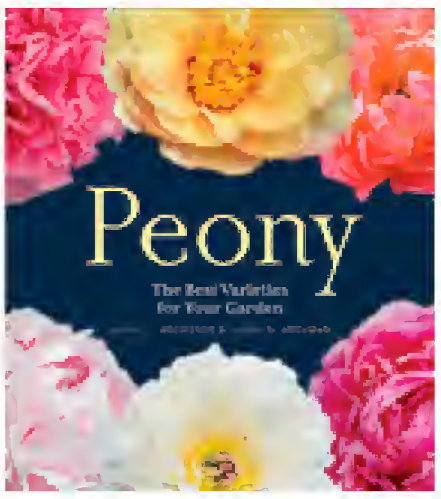
Pacific Northwest Gardening Basics #2

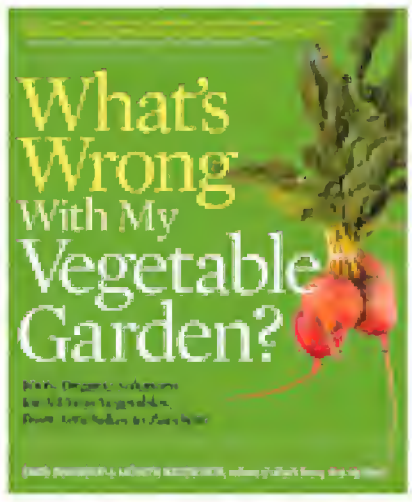
Another new book for our region is "The Northwest Garden Manifesto" by John Albers. While the title may conjure up images of gardeners marching rake-to-rake for their causes, the "Manifesto" is, instead, a very solid and comprehensive gardening book that keeps closely in mind the larger ecosystem surrounding any private garden. Divided into three broad sections, the book asks you to

assess what you have, then make changes that are sustainable (for your garden) and healthful (for you), and finally—with regard to all your actions—think outside the garden fence.

The author is very good at presenting new approaches to regular garden chores. While these may seem mundane, they fit very well into the overarching structure and message of the book. A handy summary checklist at the end of each chapter helps you track this bigger picture. Many of the examples are from the author's own four-acre garden on the edge of Bremerton, well-captured by the photography of David Perry.







The selection of recommended plants includes natives and non-natives, as Albers emphasizes that many of the conditions that help natives thrive have been destroyed in developed sites. Other recommendations include many food-producing plants, everything from annual vegetables to fruit trees. Albers also advises engineering your lawn—if you must have one—to be either a green space, with low demands on resources, or a self-sustaining meadow.

This book's primary audience is urban dwellers, but that is most of us. "With more than half of humankind living in cities, our first steps must be developing sustainably and restoring urban biodiversity." So perhaps "manifesto" is an accurate description of Albers' goals. I recommend you read his book and make your own decisions.

In Love with the Garden

It is no secret that Barbara Blossom Ashmun is an avid gardener. Besides having a floriferous name, there are the intimate titles of her memoirs: "Married to My Garden" (2003) and "Love Letters to My Garden" (2017). This Portland garden designer and writer did not grow up as a gardener, but instead found her calling well into adulthood. A divorce and the desire to leave the world of social work helped this process.

This may be why she writes with the conviction of a convert. "No one ever died from having too many plants. And never allow partners, spouses, friends, or curmudgeons discourage you from experimenting with new plants. If anyone grills you about how many plants you bought, don't take the bait. Give them a Mona Lisa smile and change the subject."

The author has a knack for writing for both the experienced and novice gardener. She uses a light hand with Latin names, relying on her non-gardening husband's feedback to keep these in check. But that doesn't mean she resists the latest new cultivar from cutting-edge nurseries. She understands plant lust very well, but she also found an antidote to that in the Kleingarten movement in Germany. Gardeners, whose faces "shone with happiness," cultivated these small spaces with the most common of flowers and vegetables.

Ashmun concludes "Love Letters" with a poignant story (also found in the Winter 2013 issue of "Pacific Horticulture") about the loss of a giant sweet gum that dominated her back yard. Over the short period of time it took to cut down the failing tree, her yard went from shady to sunny. It was a shock. However, this gardener, now in her seventies, had the necessary resilience to create a new patio in the space the sweet gum had occupied, with more space for—yes!—more plants.

Appreciating Native Bees

Paige Embry is another engaging and humorous writer exploring a different topic: bees. And not just any bees. She is passionate about "Our Native Bees," which is also the title of her new

book. She gives honeybees their due, but laments they "get all the press—the books, the movie deals—and they aren't even from around here."

While I haven't seen many movies on honey bees, the author makes her point. We have native bees that are far better pollinators, do equal work with fewer numbers, fly in nastier weather, and often use better techniques. An example of the latter is buzz pollination, or shaking the pollen from the flower. Honeybees haven't learned this trick, but bumble bees and others have, and their work facilitates some of our favorite foods, including tomatoes.

This is not a field guide. While the author lives in Seattle, her scope for natives includes most of North America. There are some excellent, close-up photographs, but their purpose is to supplement the text, not to help with identification. Instead, this is an investigative study of many apian topics, recognizing that bees are diverse and have the power to fascinate people, even when we mislabel or misunderstand them.

One of the author's major themes is agriculture. For example, she discusses the production of low-bush blueberries in Maine and neighboring New Brunswick—and weaves together a complex tale of wild plants, wild bees, managed plants, managed bees, and the impact of various attempts at pest management. Recounting this history could be deadly dull, but in Embry's hands, it is most engaging.

Throughout all the stories, there are questions asking what is possible. Can native bees provide better solutions for our pollinating needs? Can we provide better solutions for the needs of native bees? The author provides some answers to these questions, but I think her underlying goal is that we join her on a journey to a better understanding and appreciation of the diversity of bees, especially native bees.

Peonies

Carol Adelman and her husband own a peony nursery in Salem, Oregon. She has teamed up with David Michener of the University of Michigan to write "Peony: The Best Varieties for Your Garden." Much of this book is a beautiful photo album of the most highly regarded peony hybrids, including tree and intersectional (or Itoh) peonies. While it is easy to thumb quickly through these images, if you do, you will miss a lot of information in the notes—including comments on the foliage quality or awards that designate the selection as good for landscapes.

This latter point is important. In their introduction, the authors ask some important questions of the reader. What is the purpose of your peonies? Do you want a big but short burst of bloom, perhaps to coincide with a special event? Or do you hope to stretch the bloom period out as long as possible, realizing that at best, this will be just over a month? Answering these questions will help you decide the role of peonies in your overall landscape.

Peonies are green through the summer and into the fall, often with attractive foliage. What companions will you match with them? The authors provide a number of recommended options and warn of a few plants to avoid because their root systems will compete with your peonies.

I appreciate that the authors also discuss the early spring, emerging foliage, which can be quite stunning. For companion plantings, you are encouraged to choose early spring ephemerals that are a good match, being mindful they don't die an ugly death just when the peonies are blooming. There's a lot to consider!

What's Wrong with My (fill in the blank)?

I reviewed "What's Wrong with My Plant" in the Winter 2017 issue of the "Bulletin," but I didn't realize that this 2009 publication was just the beginning for the writing team of David Deardorff and Kathryn Wadsworth of Port Townsend, Washington. They have published four more "What's Wrong with My..." books, including "Vegetable Garden" (2011), "Fruit Garden" (2013), "Houseplant" (2016) and "Marijuana Plant" (2017). The structure of each is similar to the original, with chapters to identify the symptoms and causes of the problems, and separate chapters laying out organic solutions or preferred cultural practices.

"Marijuana Plant" was likely the most challenging to write, as there is limited research on its production using organic principles. Deardorff and Wadsworth celebrate the work that has been done: "We also want to acknowledge a lot of people we don't even know. We are grateful for the many marijuana breeders and growers who have labored for years in the shadows."

Bulletin Archive Available Online

The Biodiversity Heritage Library (www.biodiversitylibrary.org) is a wonderful online library that includes many of the greatest publications on botany, horticulture, zoology and natural history. Recently, it became even more wonderful with the addition of a complete run of the "Bulletin," going back to the first issue from December 1936.

How do you access it? Use your favorite search engine to find "BHL," and then enter in the prominent search box: "Washington Park Arboretum Bulletin." This will bring up three results, reflecting the name changes of our publication over the years—"The Arboretum Bulletin (1936–1956), "The University of Washington Arboretum Bulletin" (1957–1986), and "Washington Park Arboretum Bulletin" (1986–present). Choose the years of greatest interest and begin some enjoyable browsing. It's easy to select the table of contents to pick out the articles of most interest.

Enhancements are coming, such as the ability to search by author and chapter title. Scientific plant names can be found now, using the main search box and selecting the "Scientific Names" tab in the results. This will find entries for that plant in all the publications collected by BHL, providing excellent cross-references.

This project was made possible by a grant from the Institute for Museum and Library Services. Future issues of the "Bulletin" will be scanned and added, a year after publication, by the Biodiversity Heritage Library.

Brian R. Thompson is the manager and curator of the Elisabeth C. Miller Library of the University of Washington Botanic Gardens. He is also a member of the "Bulletin" Editorial Board.

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